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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : B01D 46/42, 29/27

A1

(11) International Publication Number: **WO 95/25580**

(43) International Publication Date: 28 September 1995 (28.09.95)

(21) International Application Number: PCT/GB95/00626

(22) International Filing Date: 21 March 1995 (21.03.95)

(30) Priority Data:
9405650.4 22 March 1994 (22.03.94) GB

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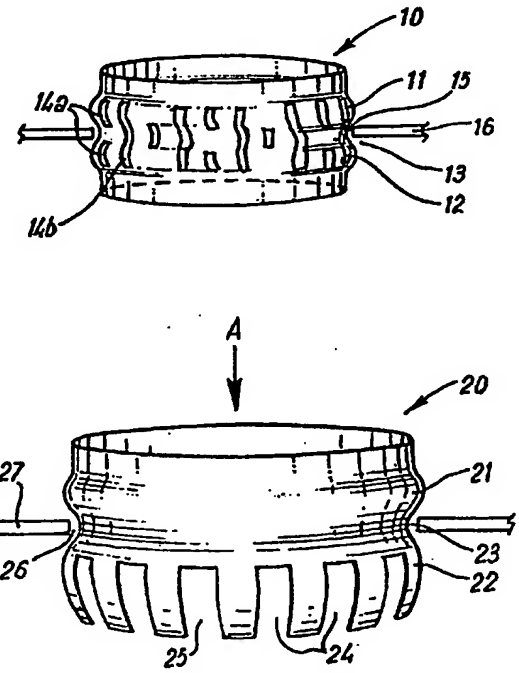
(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).

Published
With international search report.

(54) Title: FILTERING APPARATUS

(57) Abstract

A filtering apparatus comprises a bag or sleeve connected to a profiled resilient band (10, 20). The band is operative to sealingly engage an aperture (13, 26) in a further body (16, 27). The profiled band (10, 20) has a one piece construction.



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FILTERING APPARATUS

The present invention relates to filtering apparatus.

With filtering apparatus of the kind which comprise at least one filter bag or filter sleeve it is common practice to provide a sealing ring around the periphery of the bag or sleeve.

GB 1603110 describes filtering apparatus comprising a bag or sleeve having a sealing arrangement comprising a ring of felt having a radially outwardly directed flange. A spring steel or rubber ring is provided between the filter material and the felt ring. In use the felt flange is received in an appropriately profiled rim of an aperture in a partition wall through which the bag is disposed. In practice the flange is built up by appropriate application of strips of felt. Alternatively plastics, rubber rings, ropes and so forth may be used to build up the flange. Much time and effort is taken up in making these products and considerable skill is required.

The present invention has been made from a consideration of this problem.

According to the present invention there is provided a filtering apparatus comprising a filter bag or sleeve, a profiled resilient band connected to a

part of the filter bag or sleeve, the profiled band being operative to sealingly engage, or being operative to cause the filter bag or sleeve to sealingly engage,the periphery of an aperture in a further body, wherein the profiled band has a one piece construction.

As the profiled band has a one piece construction this eliminates the effort and skill involved in making such profiled bands from a number of separate parts. Accordingly the bands are less expensive to manufacture.

The resilience may be provided by using a resilient material such as spring stainless steel or hard rubber. However, it is desirable that the bands are easily compressible by hand while being sufficiently resilient to retain their original shape when the compressive force has been removed. This may be achieved by providing holes, slots or the like in the band, particularly in the projections forming the profiled regions of the band. In some embodiments of the invention it is desirable to provide open ended holes, slots or the like at one or both of edges of the band.

The top of the filter bag or sleeve may be secured to the band by sewing, adhesive or welding. The band imposes a profile on the top of the filter fabric.

In order that the present invention may be more readily understood specific embodiments thereof will

now be described by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a side elevation of one filter band in accordance with the invention; and

Fig.2 is a side elevation of a second filter band in accordance with the invention.

Referring to Fig. 1 a filtration apparatus comprises a filter sleeve (not shown) secured to an endless sealing band 10. The band 10 is made from spring stainless steel, typically in the order of 0.38mm thick. Two projections 11,12 extend radially outwardly from the band 10 so as to define a channel 13 therebetween. A number of apertures 14 are provided in the band in the region of the projections so as to ensure that the projections are readily resiliently deformable. In some instances separate apertures 14a are provided in the two projections and in other locations a single slot 14b is provided which spans both projections. The band 10 is secured directly to the filter sleeve by sewing or welding.

In use the band is received in an aperture 15 defined by a cell plate 16. One of the projections is compressed by hand and inserted into the aperture 15 at which time the projection springs outwardly and the boundary of the aperture 15 is securely captured in the channel 13 defined between the projections 11 and 12. The channel 13 sealingly engages the boundary of the aperture 15 such that a dust tight seal is provided.

Referring to Fig. 2 a second spring stainless steel band 20 comprises projections 21,22 defining a channel 23 therebetween. A plurality of open ended slots 24 are provided at one end of the band 20. The free ends of the flanges 25 defining the slots are directly inwardly. The band is secured directly to the top of the filter sleeve by sewing or welding.

In use the band is inserted in direction "A" into an aperture 26 in a filter cell plate 27. As the ends of the flanges 25 are directly inwardly the flanges automatically move inwardly as the band is inserted into the aperture 26. Once in position the flanges 25 spring outwardly and the cell plate is securely captured in the channel 23 so as to provide a dust tight seal.

The bands described above are considerably easier and cheaper to manufacture than known sealing bands for filter sleeves, but remain simple to use and effective in operation.

It is to be understood that the above described embodiments have been described by way of illustration only. Many modifications and variations are possible.

CLAIMS

1. A filtering apparatus comprising a filter bag or sleeve, a profiled resilient band connected to a part of the filter bag or sleeve, the profiled band being operative to sealingly engage, or being operative to cause the filter bag or sleeve to sealingly engage, the periphery of an aperture in a filter body, wherein the profiled band has a one piece construction.

2. A filtering apparatus as claimed in claim 1, wherein the band comprises a resilient material.

3. A filtering apparatus as claimed in claim 1 or claim 2, wherein the band comprises spring stainless steel.

4. A filtering apparatus as claimed in claim 1 or claim 2, wherein the band comprises rubber.

5. A filtering apparatus as claimed in any preceding claim, wherein holes and/or slots are provided in the band.

6. A filtering apparatus as claimed in claim 5, wherein the holes and/or slots are provided in a profiled region of the band.

7. A filtering apparatus as claimed in claim 5 or claim 6, wherein the holes and/or slots are provided in at least one edge of the band.

9. A filtering apparatus substantially as described herein with reference to the accompanying Fig.1 or Fig.2.

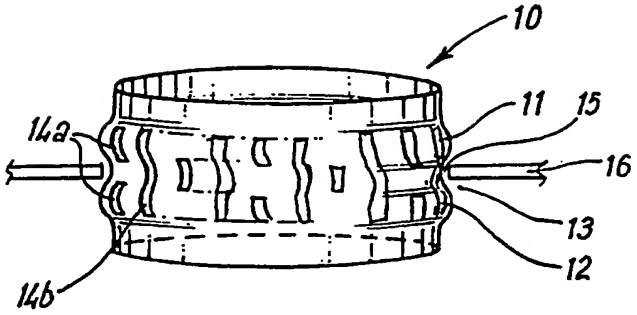

FIG. 1

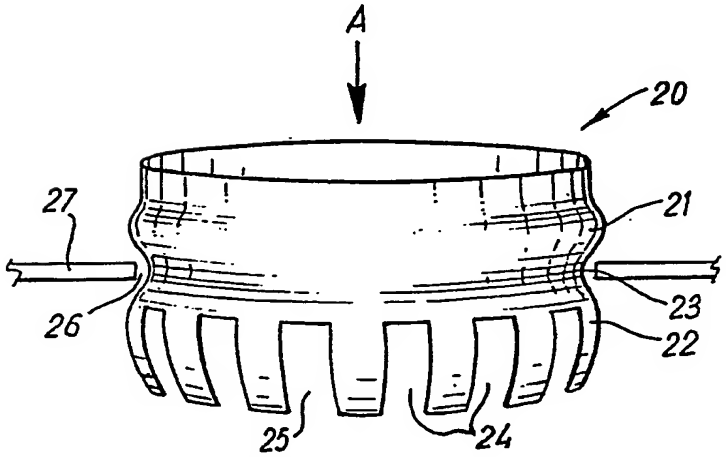

FIG. 2

INTERNATIONAL SEARCH REPORT

Inter al Application No
PCT/GB 95/00626

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B01D46/42 B01D29/27

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US-A-4 015 961 (LAURENCE M. HOWARD) 5 April 1977 see column 3, line 44 - column 4, line 48 see column 4, line 62 - column 5, line 16 see column 5, line 50 - line 64; figures	1-9
A	DE-A-25 43 931 (BAUR, JAN VOM) 7 April 1977	
A	DE-A-28 27 926 (AB SVENSKA FLÄKTFABRIKEN) 18 January 1979 see page 9, line 8, paragraph 3 - page 10, line 26; figure 3	1-3,9
A	US-A-4 310 336 (HARLEY G. PETERSON) 12 January 1982 see figure 3	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
16 June 1995	23.06.95

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Van Belleghem, W

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
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DE-A-2543931	07-04-77	NONE		
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US-A-4310336	12-01-82	NONE		